AF
EFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: James John Wilson et al.)
For: REDUCED NOISE MULTI-)
RIBBED POWER TRANSMISSION)
BELT)
Serial No. 09/893,156)
Filed: June 27, 2001)

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Confirmation No. 3836
Docket No. DN2001117
Art Unit: 3682
Examiner: Marcus Charles

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

Oct 18, 2004
(Date of Deposit)

(Signature) 10·18·04 **(Date of Signature)**

APPEAL BRIEF

Filed herewith please find Applicants' Appeal Brief, filed in triplicate, pursuant to 37 CFR.

No fee is applicable as the Examiner reopened prosecution and Appellants filed a reply under 37 CFR 1.111, and this Appeal Brief is being submitted in the same application. See 37 CFR 1.193(b)(2). See also MPEP 1208.02.

Respectfully submitted,

Nancy T. Krawczyk – Reg. No. 38,744
Attorney for Appellants

The Goodyear Tire & Rubber Company
Department 823
1144 East Market Street
Akron, Ohio 44316-0001
Telephone: (330) 796-6366

APPEAL BRIEF

Real Party in Interest

The real party in interest of the present application is The Goodyear Tire & Rubber Company.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-5 are pending in the application. Claims 1-5 stand rejected.

Status of Amendments

There are no outstanding amendments. No amendments have been filed following the final rejection.

Summary of the Invention

The present invention is directed to a power transmission belt with improved noise characteristics.

Every power transmission belt, including that of applicants, has a longitudinal axis and a transverse axis. For the present invention, the longitudinal direction is indicated by the arrow L in Figure 1. The transverse direction of the belt is perpendicular to the longitudinal direction. It is conventional in the power transmission belt art to identify the longitudinal direction of the belt as the longest axis of the endless belt as the belt travels along the longitudinal direction of the belt. The transverse direction of the belt extends from one longitudinal side of the belt to the opposing longitudinal side of the belt.

In the present application, the belt has multiple parallel longitudinal grooves 19 and a plurality of transverse grooves 20. The transverse grooves 20 are inclined at an angle α rather than perpendicular to the longitudinal direction L (para 10) and are spaced along the longitudinal direction of the belt. The combination of longitudinal grooves 19 and the transverse grooves 20 form a plurality of cogs 21. The cogs 21

extend upward from the groove base, see Figure 2. The cogs 21 between a pair of transverse grooves 20 form a cog row 22.

The longitudinal length between the transverse grooves 20 is defined as the pitch length P of the cogs 21. Each cog row 22 has a defined pitch length P. In accordance with the invention, the longitudinal pitch length P of adjacent rows may not be identical. Along the entire longitudinal length of the belt, the pitch lengths are randomly arranged (pg 3, unnumbered paragraph). The randomization of the pitch lengths around the belt length breaks up any repeating noise harmonics and reduces the overall belt noise.

Issues

Is the subject matter set forth in claims 1 - 5 obvious under 35 U.S.C. § 103(a) over Janne (US Patent 5,382,198) in view of Miranti, Jr (US Patent 5,055,090)?

Grouping of Claims

Claims 1 - 5 are grouped together and stand or fall together.

Arguments

Claims 1 - 5 stand rejected under 35 U.S.C. § 103(a) as obvious over Janne in view of Miranti, Jr.

> *A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.*
> 35 U.S.C. § 103(a)

Janne is cited as disclosing a power transmission belt having longitudinally extending grooves and transverse grooves inclined at an angle of less than 90° relative to the longitudinal direction of the belt, the longitudinal and transverse grooves

forming cogs on the belt inner surface. It is acknowledged in the rejection that Janne does not disclose that the cogs may have at least three different longitudinal lengths randomly arranged in a non-sequential manner along the length of the belt as recited by Applicants.

Miranti discloses an endless power transmission belt 20 having multiple longitudinal grooves 26 and transverse grooves 28 that form rows of cogs. Miranti is cited as disclosing a transmission belt comprising cogs that are "randomly arranged in a non-sequential manner along the length of the belt in order to distribute the noise over a wide frequency range and to reduce noise during normal operation." Applicants disagree with this incomplete characterization of Miranti.

Miranti discloses forming the belt wherein the longitudinal spacings between the transverse grooves and/or the depths of the grooves should be staggered to reduce the noise of the belt (col 4, lines 35-43). When Miranti discloses a working embodiment of the belt wherein the groove depth is randomly staggered (col 6, lines 5-16), it is disclosed that for the full belt length, the belt has "four repeating sequences therein for the staggered depth pattern thereof" (col 6, lines 15-16).

In another embodiment of the belt wherein it is the spacings "s" between the grooves that are randomly staggered (col 6, 47-62), Miranti discloses a sequence of spacings A-E, wherein along the belt length, there is a "repeating of such a sequence of spacing over and over again throughout the entire longitudinal length of the belt construction" (col 6, lines 54-60).

Miranti teaches that when varying the groove depths or groove spacings, a random sequence is generated, and then that sequence is repeated multiple times along the length of the belt. Thus, a repeating pattern is generated along the length of the belt by the repetition of the sequence. In simpler terms, a sequence of spacings or grooves depths may be identified as AECCDBC..... (col 6, line 61), and this sequence may be identified as X. As the sequence is repeated along the belt length, it is a pattern of XXX..., i.e. a repeating pattern.

It is held that it would have been obvious to one of ordinary skill in the art to modify the belt of Janne in view of Miranti to distribute the noise over a wide frequency range and to reduce noise during normal operation.

To establish *prima facie* obviousness, there 1) must be some suggestion or motivation in the art to modify or combine the references; 2) must be a reasonable

expectation of success and 3) the combined references must teach or suggest all the claim limitations.

Applicants do not dispute any teachings of Janne and the applicability of Janne in regards to the recited belt. Instead, the entire rejection of the claims hinges upon what is taught or suggested, or not taught or suggested by Miranti. While Miranti provides teachings that may be combinable with Janne, the belt of Janne as modified by Miranti fails to teach or suggest all the claim limitations as recited by Applicants. Additionally, there is no suggestion or motivation in Miranti to modify the belt of Janne to result in a belt having a non-repeating random pattern of cog widths along the entire length of the belt as recited.

Miranti teaches various random spacings are arranged into a sequence, and the sequence is repeated "over and over again" (col 6, line 57). Thus, there is a repetitious pattern in the belt arrangement. As Miranti teaches that when a randomly staggered spacing is used, it is arranged into a sequence which is then repeated in regard to the belt of Figure 7, those skilled in the art would appreciate that, even when used in the context of the belt of Figures 3 and 4, or the belt of Janne, the randomly staggered spacings would be arranged in a repeating sequence along the length of the belt in combination with the sequence of varying groove depths, contrary to the claimed invention. Thus, the belt of Janne as modified by Miranti fails to have each and every claim limitation.

There is nothing in Miranti as applied to the belt of Janne that teaches those skilled in the art that any variation of the belt features, either the groove depths or the spacing of the grooves, could be randomly arranged, with no repeating pattern, along the entire length of the belt as recited. As discussed above, Miranti teaches that there can be random arrangements of the different lengths, but these random arrangements, and even ones based on mathematical equations, are arranged in sequences, which are then repeated along the length of the belt. Once the sequence is repeated, then a pattern is generated, and there is no random arrangement along the entire length of the belt.

As recited and disclosed by Applicants, the variation of the cog length along the entire belt longitudinal length is a random generation, with there being no repeated sequence that follows a previous sequence as taught by Miranti.

In response to Applicants' argument that Miranti teaches a repeated sequence, it is held that Miranti "discloses the cog groove can be arranged in a non-sequential manner such as a matrix. Col 6, lines 20-27". This response is confusing. The only reference to a matrix in Miranti is in col 6, lines 37-46 and states that the grooves and projections may be "based on a like matrix" as that of US Patent 4264314. But Miranti never discloses what this matrix is, nor does US Patent '314 define its teachings as a "matrix."

It is also stated in the rejection that Miranti "discloses the use of randomly staggering the rows to reduce noise." Applicants recognize that Miranti teaches random staggering of the groove depths or the groove spacings; however, Miranti teaches establishing a random sequence and then repeating the sequence, thereby generating a repeating pattern in the belt. Thus the random staggering is not for the entire length of the belt.

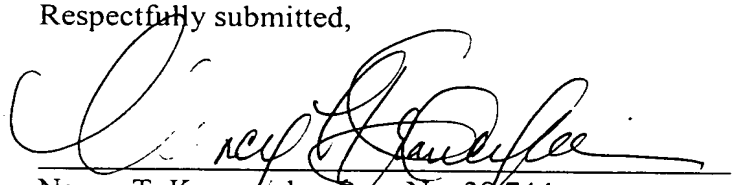
In further arguing against Applicants statement that Miranti teaches repeating sequences, it is held that while Miranti provides an example of a non-sequential random staggering pattern of rows (A-E), the "non-sequential pattern is repeated along the length of the belt, but they are repeated sequentially in groups and each row of the group is non-sequentially staggered." This is very confusing. At first, it appears to acknowledge Applicants argument: "the non-sequential pattern is repeated along the length of the belt." As argued herein, if a pattern is repeated along a full belt length (even if the pattern is made of multiple elements), than the entire belt length is not defined as randomly arranged. The statement of "they are repeated sequentially in groups" again reinforces Applicants argument that Miranti teaches repeating sequences. While each row of the group is non-sequentially staggered, as acknowledged by Applicants, the repeating of the group itself creates a repeating pattern along the length of the belt. A repeating pattern is not complete randomization of the entire belt length as recited by Applicant.

The end statement in the Final Office Action of "Thus, it is clear that each row is non-sequentially arranged along the entire length of the belt" does not flow from the arguments even presented in the office action as it is stated above. While each individual row in the belt of Miranti is randomly arranged relative to its immediate adjacent row, a repeating pattern is generated in the length of Miranti, contrary to the recited belt.

The difference between the pattern generation taught by Miranti and that claimed by the invention might best be understood by explaining the noise pattern generated during operation of the belt. As a belt travels about a pulley, a noise pattern is generated. If every belt groove and/or lug has the same shape and pitch length, a constant hum occurs. When the groove and/or lug shape or pitch length is changed, it breaks up the constant hum, by changing the frequency noise. A varied noise pattern is much more esthetically pleasing to people than a constant hum. For a Miranti belt, wherein a random sequence is repeated multiple times around a belt length, each random sequence generates a noise pattern, and for a single rotation of that belt, that noise pattern is generated multiple times. For a very fast belt rotation, the repeating noise pattern begins to approximate the constant hum. For Applicants' recited belt, as the entire belt length has a non-repeating random arrangement, only a single noise pattern is generated with each rotation of the belt; thus resulting in eliminating the constant hum as much as physically possible when configuring the belt itself.

It is respectfully requested that the rejection of the claims as being obvious over Janne in view of Miranti, Jr. be withdrawn.

Respectfully submitted,



Nancy T. Krawczyk – Reg. No. 38,744
Attorney for Appellants

The Goodyear Tire & Rubber Company
Department 823
1144 East Market Street
Akron, Ohio 44316-0001
Telephone: (330) 796-6366
Facsimile: (330) 796-9018

CLAIMS

1. A power transmission belt having an inner surface comprising longitudinally extending grooves and transverse grooves, the transverse grooves are inclined at an angle less than 90° relative to the longitudinal direction of the belt and all the transverse grooves have the same groove depth, the transverse and longitudinal grooves form transverse rows of cogs on the belt inner surface, wherein the rows of cogs have at least three different longitudinal lengths, and the rows of differing lengths are randomly arranged, in a non-sequential manner, along the entire length of the belt.

2. A belt in accordance with claim 1 wherein the belt is characterized by the rows of cogs having three different longitudinal lengths.

3. A belt in accordance with claim 1 wherein the belt is characterized by the rows of cogs having three to six different longitudinal lengths.

4. A belt in accordance with claim 1 wherein no more than four longitudinally adjacent rows of cogs have the same longitudinal length.

5. A belt in accordance with claim 1 wherein the belt has three different longitudinal lengths, the smallest length being designated as 1, the medium length being designated as 2, and the largest length being designated as 3, and the sequence around the entire belt is 3 3 3 2 1 2 3 2 3 2 1 1 2 1 1 2 1 2 3 1 3 3 1 2 2 2 1 3 1 2 1 3 1 1 1 2 3 3 2 2 2 3 2 1 1 3 3 3 2 1 2 3 2 3 3 2 1 2 2 1 1 3 2 1 2 3 1 1 3 1 2 3 2 1 1 3 1 2 2 3 3 3 1 1 3 3 2 3 1 1 1 2 2 3 2 1 1 2 1 3 3 2 3 3 3 2 2 3 3 1 1 3 2 1 2 2 1 1 3 2 2 3 3 3 1 2 2 1 1 1 2 3 2 3 1 1 1 2 1 2 2 3 3 1 1 3 2 1 3 3 2 3 1 3 3 2 3 2 1 2 3 1 3 1 1 2 1 2 1 2 3 2 3 3 3 1 1 2 1 2 3 2 2 2 2 3 3 2 1 1 3 2 3 2 3 1 2 2 1 2 1 3 1 1 1 1 3 2 1 2 1 3 3 2 3 2 1 2 1 2 3 2 1 2 2 3 1 1 1 3 1 3 1 3 2 3 3 2 1 1 2 3 1 2 2 3 2 3 3 3.